CERES Delivery & Test Process

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CERES Systems Engineering Committee

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CERES Data Product Development Process

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CERES Subsystems and PGEs

Subsystem	Number of PGEs
Instrument	10
ERBE-like	7
Clouds	6
Inversion	6
Instantaneous SARB	3
TISA Gridding	7
TISA Averaging	3
Synoptic SARB	1
GGEO	13
Regrid MOA	1
Total	57

CERES Documentation

Answers to three recurring questions:

1. **How do we ensure that CERES documentation is kept up to date?**

2. **Is the CERES documentation redundant?**

3. **Is the documentation actually used by anyone?**

CERES Documentation

Document	Completion Requirement	DM Team/ Working Group	CERES CM/ Documentation	ASDC
SCCR	Submitted at least 2 weeks before delivery.	1. Must include all science and DM changes. 2. Used to update Data Product Description/ Abstract.	1. Used to evaluate and approve changes.	1. Used to review upcoming changes to PGEs.
Pre-Delivery Memo	Submitted 2 weeks before delivery.	1. Must include detailed New PGE information.	1. Used as notification of upcoming delivery.	1. Used as notification of upcoming delivery. 2. New PGE information used to schedule/ begin changes to production scripts.

CERES Documentation

Document	Completion Requirement	DM Team/ Working Group	CERES CM/ Documentation	ASDC
Test Plan	Submitted at time of delivery.	1. Must update and test all commands before delivery.	1. Document formatted and PDF version created. 2. Used to test delivered PGEs.	1. Used to help understand how PGEs work.
Operator's Manual	Submitted before or at the time of delivery	1. Very important that all information be kept up to date with delivered code.	1. Document formatted and PDF version created. 2. Information used to update the CERES File Management Policy. 3. Not Used by CM SSI&T.	1.Used to create/ update production scripts. 2. Used by Epilogue developers. 3. Used by APGS developers. 4. Used by ASDC Operations.

CERES Documentation

Document	Completion Requirement	DM Team/ Working Group	CERES CM/ Documentation	ASDC
Final Delivery Memo	Submitted at time of delivery	1. All sections must be completed	1. Checked for completeness before delivery to ASDC.	1. Used as notification of delivery. 2. Provides final details of delivery package.
CERES File Management Policy	Updated by Documentation Team before Operator's Manuals is released.	1. File Management Policy should be reviewed for completeness and correctness.	1. File Management Policy updated using Operator Manual changes.	1. Used to create/ update production scripts. 2. Used by epilogue developers. 3. Used by APGS developers. 4. Used by ASDC Operations.

CERES Documentation

Document	Completion Requirement	DM Team/ Working Group	CERES CM/ Documentation	ASDC
Data Product Collection Guide	Draft version should be available before a Data Set is released to the public.	1. Maintains document.	1. Document formatted and PDF version created. 2. Not Used by CM.	1. Made available on the Web by User Services.
Data Product Catalog Pages	Required before a Data Set can be released to the public.	1. Maintains document.	1. Document formatted and PDF version created. 2. Not Used by CM.	1. Made available on the Web by User Services. 2. Linked to Data Set Read Package.
Data Quality Summary	Required before a Data Set can be released to the public.	1. Science Team maintains document.	1. Not Used by CM.	1. Made available on the Web by User Services.

CERES Documentation

Document	Completion Requirement	DM Team/ Working Group	CERES CM/ Documentation	ASDC
Data Product Description/ Abstract	Recommended completion before processing begins.	1. Maintains document based on SCCR information.	1. Not Used by CM.	1. Made available on the Web by User Services.
Data Product Read Package README file	Required before a Data Set can be released to public.	1. Maintains document.	1. Not Used by CM.	1. Updated by User services. 2. Sent with CERES Data orders.

CERES Documentation

Document	Completion Requirement	DM Team/ Working Group	CERES CM/ Documentation	ASDC
Production Request Document	Recommended completion before processing begins. Erika Geier maintains based on Working Group guidance.	1. Provides Guidance.	1. Impacts Delivery Schedule.	1. Used to schedule production. 2. CCodes are associated with Production Strategies for production I/O.

Procedure

- **Get software updates from developers**
- **Integrate software updates with existing PGEs**

  For SS1: 10 PGEs (CER1.1P1 thru CER1.1P6, CER1.2P1, CER1.3P1 thru CER1.3P3)

- **Validate output from updated PGEs (requires Science Feedback)**
- **Create SCCR, listing all updates being made as Science or Non-Science, data affected (TRMM, Terra or Aqua) and affected PGEs**

Procedure (cont'd)

- **Create Pre-Delivery Memo and send to CERES CM**
- **Update Test Plan and Operations Manual (as needed)**

  For SS1: **10 PGEs and 5 Instruments**
  2 PGEs require test/ops instructions for 1 instrument
  4 PGEs require test/ops instructions for 2 instruments
  4 PGEs require test/ops instructions for 5 instruments
  30 Test Procedures and Operation Instructions

- **Gather input data as listed in Test Plan**
- **Test all PGEs being delivered at SCF using Test Plan**

Procedure (cont'd)

- Move software to DAAC testing area (currently /ENG/CERES on samantha)
- Run Test Plan for delivered PGEs to create expected output
- Rerun Test Plan for delivered PGEs to create expected comparison results (for SS1 this is a separate test)
- Remove created output and binary files (only source, input data and expected output data are delivered)

Procedure (cont'd)

- tar source code, ancillary, input and expected output data files for delivery, following naming convention outlined in the CERES Subsystem Delivery Procedures
- Move tar files to SCF and deliver to CERES CM using CM provided scripts
- Create Final Delivery Memo and deliver to CERES CM (cerescm@.larc.nasa.gov)
- Deliver updated documents to CERES Documentation (ceresdoc@larc.nasa.gov)

Problems

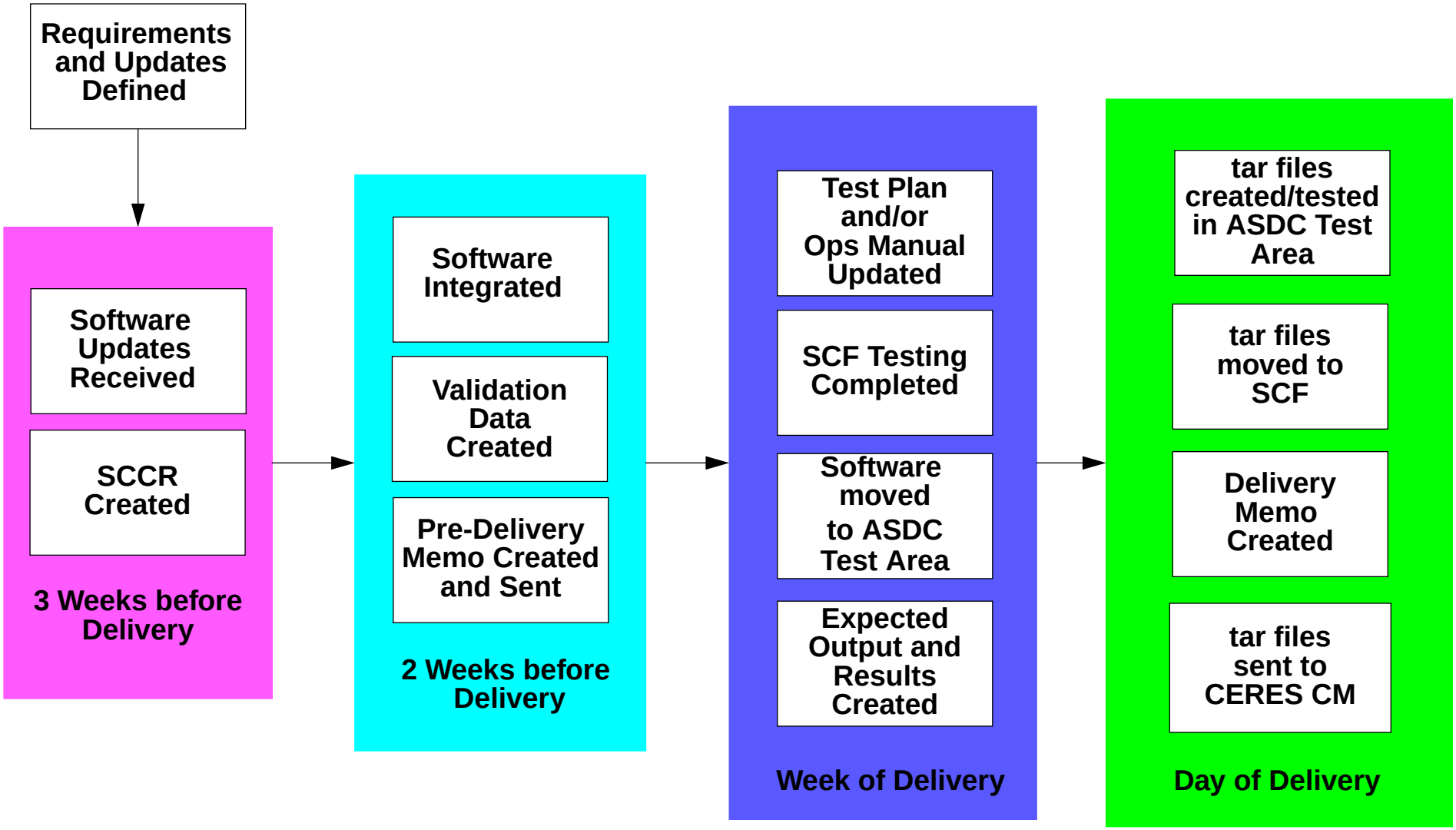
- New bugs/requirements are discovered/added at the last minute
- Code from developers does not compile or does not run
- Validation analysis is not completed in a timely manner
- Test area at SCF/DAAC does not have enough room to hold test results or to create tar files
- Problems at SCF/DAAC prevent testing (disk problems, system crash, etc.)

Problems (cont'd)

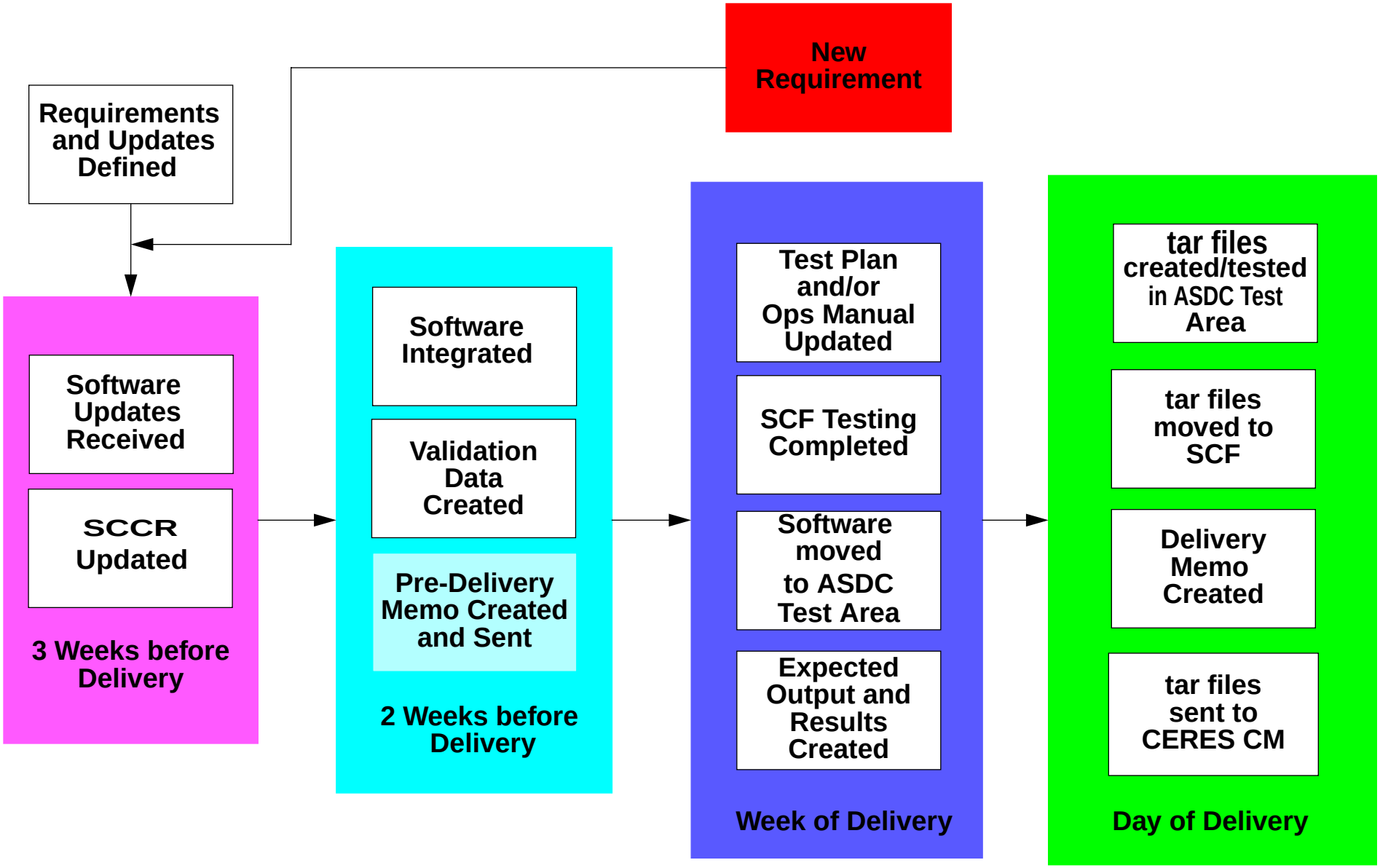
- Moving tar files from DAAC to SCF in preparation for CERES CM delivery takes several hours
- Change in priorities, something with a higher priority supercedes the delivery
- Delay in delivery of previous PGE(s)

CM Delivery Process
Algorithm Developers

Delivery Flow



CM Delivery Process
Algorithm Developers



CERES CM/Documentation Team

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CERES Documentation

- Updates the format of documents to comply with standards
- Updates the File Management Policy according to the Subsystem's Operator's Manual
- Posts FrameMaker on the Web
- Delivers PDF to the ASDC
- http://asd-www/ceres/doc.html
- Send documents and questions to ceresdoc@larc.nasa.gov

CM Web Site

- http://earth-www.larc.nasa.gov/cerescm/
- SCCRs
- Delivery Schedules
- Delivery Procedures
- CM Filenaming Conventions
- FrameMaker version of last Delivery Memo
- Send questions to cerescm@larc.nasa.gov

SCCR

- Software Configuration Change Request
- Official history of deliveries
- Changes listed in SCCRs are used in Data Product Description/Abstracts

CERES Software Configuration Change Request

Subsystem Id: ☐ **SCCR Date: MM/DD/YYYY** **SCCR Number:**

Description of Change (Science):

CERESlib Change: ◯ **Yes** ◯ **No**
(If "YES" changes described in this SCCR will be made only in CERESlib.)

Reason for Change (Science):

Description of Change (non-Science):

Reason for Change (non-Science):

Affected PGEs:

Est. Time to Complete Changes:

Planned Delivery Date:

Impact:

Approval Date: MM/DD/YYYY Originator: ☐

Delivery Schedule

- Created from Erika's spreadsheet which is based on Bruce Wielicki's schedule
- Scheduling conflicts are coordinated with Erika
- Target delivery days are Fridays so CM has the next week for testing
- Dates are "target" dates – deliver when ready

Types of Deliveries

- Full Subsystem Delivery
  - All subsystem software & data are delivered
- Full PGE Delivery
  - All software & data associated with a PGE are delivered
- Delta Delivery
  - Only scripts and/or data are delivered

Delivery Memo

- Two Memos – Preliminary and Final
- Pre-Delivery Memo is the notification of the delivery date
- Final Delivery Memo documents what was delivered
- PDF version is sent to the ASDC

Purpose of CM Testing

- Compile the Code
- Execute the Test Cases for the delivered PGEs to ensure that the code runs the way the subsystem personnel expect

Installing Delivery in SSI&T Area on samantha (/SSIT/CERES)

- Delivery package is FTPed from thunder to samantha (/delivery/CERES/incoming)
- Delivery package is copied to /verify/CERES, uncompressed, & untarred
- Subsystem directory is recursively copied to /SSIT/CERES

Compilation & Testing

- CM compiles the delivered PGEs according to the instructions in the subsystem's Test Plan
- Each delivered PGE is tested according to the Test Plan
- After testing is successfully completed, CM releases the delivery to the ASDC for operational testing

Testing Problems

- If a problem is encountered, CM works with the subsystem personnel to resolve the issue in the most efficient manner.

Release Notification

- Email sent to ASDC, NASA, appropriate subsystem personnel, and SAIC CERES supervisors
- Includes final Delivery Memo
- PDF version of updated Test Plan and/or Operator's Manual is delivered to ASDC

Final Steps

- After ASDC operational testing is complete ASDC personnel create the final tar files using the .list files
- Final tar files are stored in CM repository on thunder
- Only the most recent data tar file(s) is kept
- Original tar files are deleted from CM repository on thunder

ASDC SSI&T TEAM

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SSI&T PREPROCESS

Receive SCCR E-MAIL

- SCCR NUMBER
- DESCRIPTION OF CHANGE (SCIENCE)
- REASON FOR CHANGES (SCIENCE)
- DESCRIPTION OF CHANGE (NON-SCIENCE)
- REASON FOR CHANGE (NON-SCIENCE)
- AFFECTED PGEs
- PLANNED DELIVERY DATE

SSI&T PREPROCESS

EXAMPLE: SCCR #402 E-MAIL DATA

SCIENCE CHANGES:

•MODIFIED GAINS FILES FOR AQUA

•PREVIOUS GAINS WERE INCORRECT - ASDC COULD REMOVE DATA FROM DISK AND/OR ARCHIVE IF NECESSARY.

SSI&T PREPROCESS

EXAMPLE: SCCR #402 E-MAIL DATA

NON-SCIENCE CHANGES:

- MAKE SCRIPTS COMPATIBLE TO NEWEST TOOLKIT
- TRANSITION TO NEWEST TOOLKIT WOULD NOT NEED A NEW DELIVERY
- METADATA ROUTINES CONSOLIDATED TO ONE

SSI&T PREPROCESS

DELIVERY SCHEDULE

- SUBSYSTEMS DELIVERING
- PROPOSED DELIVERY DATES
- NUMBER OF DELIVERIES FOR A GIVEN PERIOD

INITIAL ASSIGNMENT CAN BE MADE TO TEAM MEMBER FOR TESTING.

SSI&T PREPROCESS

PRE-DELIVERY MEMO

- NOTIFICATION OF DELIVERY DATE
- IMPACT ON ASDC
- DESCRIPTION OF CHANGES
- REFERENCES THE SCCR NUMBER

SSI&T PREPROCESS

CM ACKNOWLEDGES PRE-DELIVERY MEMO

- SCCR NUMBER
- PGE NUMBER(S) AFFECTED
- LISTS THE CONFIGURATION CODES FOR OUTPUT PRODUCTS
- CCODES FOR PRODUCTION REQUEST are TAKEN FROM THIS DOCUMENT

SSI&T PREPROCESS

RELEASE NOTICE FOR THE SCCR

- NOTIFICATION THAT CERES CM TESTING IS COMPLETE
- LIST OF FILES DELIVERED
- PDF VERSION OF FINAL DELIVERY MEMO
- REFERENCES THE SCCR NUMBER
- STATUS OF COMPILATION AND TESTING
- TEST PLAN
- OPERTOR’S MANUAL

SSI&T TESTING

PURPOSE OF TESTING

- ENSURE THAT THE DELIVERED CODE RUNS IN THE PRODUCTION ENVIRONMENT
- ENSURE THAT PREVIOUS ISSUES HAVE BEEN ADDRESSED IN THIS DELIVERY

TEST PLAN

- INITIAL INTRODUCTION TO MANUAL TESTING OF PGE(S)
- GAIN KNOWLEDGE FOR THE SEQUENCE OF PGE EXECUTION
- ABLE TO WALK THROUGH THE TESTING PROCESS AND PRODUCE THE REQUIRED TEST RESULTS (AS IN A DRAFT)

OPERATOR'S MANUAL

OPERATOR'S MANUAL

- FILE MANAGEMENT POLICY
  - –USED TO UPDATE FILE MANAGEMENT DATABASE
    - PGE EPILOGUE
      - –VERIFIES OUTPUT FILES AS LISTED IN PCF FILE
        - *ALL OUTPUT FILES MUST BE LISTED IN PCF
      - –DISPOSES OF FILES AS INDICATED UPON A SUCCESSFULLY EXECUTION.
        - »DO NOT REMOVE FILES NEEDED FOR TARGET PGE
        - »ENSURE THAT ALL MANDATORY/OPTIONAL FILES ARE LISTED
    - STEPS ARE VERIFY, PARSE, ARCHIVE, STAGE, REMOVE.

OPERATOR'S MANUAL

- SSI&T TEAM
  - –RESPONSIBLE PERSON(S)
  - –OPERATING ENVIRONMENT
    - •RUNTIME PARAMETERS
    - •ENVIRONMENT SCRIPT REQUIREMENTS
    - •EXECUTION FREQUENCY(DAILY,HOURLY…)
    - •RESTRICTIONS IMPOSED IN PROCESSING
    - •DEPENDENCIES (PREVIOUS PGEs, INGEST DATA,…)
  - –DATA FORMATS (INPUT/OUTPUT)
  - –PRODUCTION RULES DETERMINED BY WORKING GROUP
  - –Number of PGEs

OPERATOR'S MANUAL

- APGS TEAM
  - –ROBERT AUBERG
  - –SHAFAN CHAN
  - –REGINA ELEY-TYNES
  - –SRIDHAR "PANI" PANIGRAHI
  - –TOM REGAN
  - –DON RIEGER

APGS PROCESSES ARE TRIGGERED BY DATA ARRIVAL AND/OR PRODUCTION REQUEST.

DOCUMENTATION USED IN THE SAME MANNER.

OPERATOR’S MANUAL

- OPERATION TEAM
  - –LATIS TEAM
    - PROCESS PGEs NOT YET IN THE APGS SYSTEM
    - MANUAL REPROCESSING
    - COPY OF MANUAL STORED IN OPS AREA.

SSI&T TESTING

- MAINTAINS A 34 ITEM CHECKLIST FOR EACH TESTED PGE.
- EXECUTE TEST PLAN
- CREATE/UPDATE WRAPPER SCRIPTS WITH RULES PER OPS MANUAL AND PRODUCTION REQUEST
  - ENVIRONMENT VARIBLES
  - VERIFY INPUT FILES ARE ON DISK
  - EXECUTE PCF INPUT GENERATOR
  - EXECUTE PCF GENERATOR
  - CALL SCHEDULER FOR THE EXECUTABLES WITH RUNTIME PARAMETERS

SSI&T TESTING

OPERATIONAL TESTING:

- APGS IS INFORMED OF AVAILABLE PCF FILES
- PREVIOUS FAILURES IN PRODUCTION
- MONTH/YEAR BOUNDARIES
- FIRST DATA DATE OF PRODUCTION REQUEST
  - –DATA USED
  - –JOB NUMBERS
  - –TIME (WALL, USER, SYSTEM)
  - –EXIT STATUS

SSI&T TESTING

OPERATIONAL TESTING:

- MET FILES ARE CHECKED FOR QUALITY FLAG VALUES
- CHECK TO ENSURE NO ZERO LENGTH FILES
- PROBLEM REPORTS – SUBSYSTEM OR DOCUMENTATION
- TEST THE PGE EPILOGUE
- A MINI MANUAL IS CREATED FOR OPS
  - –INPUT/OUTPUT FILES, CC CODES, PRODUCTION STRATEGIES, EPILOGUE INPUT

SSI&T TESTING

SUCCESSFUL COMPLETION:

- SUBSYSTEM TARRED UP FOR PRODUCTION
- CHANGE FORM COMPLETED

DELIVERY PROMOTION

PROMOTION TO OPERATIONS

- ASDC CM INFORMED OF SOFTWARE READINESS
- CM PROMOTES CERES SOFTWARE AND PRODUCTION SCRIPTS
- TESTER PERFORMS PRODUCTION TEST USING FIRST PENDING DATA DATE OF PR
- RELEASE SOFTWARE TO PRODUCTION MANAGER

DELIVERY PROMOTION

PROMOTION TO OPERATIONS

- "EDITION" PRODUCTS
  - –REQURE VALRx PROCESSING OF A PARTIAL PR FOR SCIENTIST APPROVAL BEFORE CONTINUING A ACTUAL FULL EDITIONx PROCESSING
    - THIS REQUIRES SCRIPT CHANGES FOR THE PRODUCTION STRATEGY.

CM COMPLETES PROCESS

- CREATES TAR FILES FOR CERES CM
- EMAILS CERES CM OF TARFILE AVAILABLILTY
- CHECKS DELIVERY INTO CLEARCASE
- UPDATES ASDC CM DATABASE

- TESTER COMPLETES CHECKLIST FOR PGEs
- RECORDS RESOLUTION FOR PROBLEM REPORT

APGS TESTING

- ANALYZE CURRENT TEST PCF FILE(s) FROM SSI&T
- UPDATE TEST DATABASE WITH ENVIRONMENT VARIABLES
- UPDATE APGS CODE
- EXECUTE TEST JOB(s)
- VERIFY SUCCESSFUL COMPLETION

APGS TESTING

- DETERMINE PRODUCTION READINESS OF SOFTWARE
- PROMOTE APGS SOFTWARE CODE AND DATABASE TO PRODUCTION
- EXECUTE TEST JOB
- VERIFY SUCCESSFULLY COMPLETION
- TAR UP FILES FOR ASDC CM
- NOTIFY CM AND PRODUCTION MANAGER OF PGE PRODUCTION READINESS

APGS PGE’s IN PRODUCTION

- **DPREP**

  CER0.1P1

- **INSTRUMENT**

  CER1.1P1, CER1.1P3, CER1.1P5, CER 1.2P1

- **ERBELIKE**

  CER2.1P1, CER2.2P1 CER 2.3P1 CER2.3P2, CER3.1P1, CER3.2P1

- **CLOUDS**

  CER4.1-4.0P1, CER4.1-4.1P1, CER4.1-4.2P1, CER4.1-4.3P1 (TRMM ONLY)

- **SARB**

  CER5.2P1, CER5.0P1, CER5.1P1

- **TISA GRID**

  CER9.1P1, CER9.2P1, CER9.3P1, CER9.4P1, CER6.1P1, CER6.2P1, CER6.3P1

- **MOA**

  CER12.1P1

THE SCHEDULER

Grid Engine, 5.3 (better known as Codine)

QSUB – command used to submit jobs to scheduler

- A new shell is spawned
- All previously set environment variables are lost($SS, $PS, $CC, and other subsystem environment)
- Variables must be set in the main run script

CERES Delivery Memo

Please fill in the appropriate sections or supply references to applicable documentation.

Preliminary Delivery Memo ___ Final Delivery Memo ___

A. IDENTIFICATION

Instrument Team Name **CERES**
Subsystem Name _____
Delivery Memo Date _____
SCCR Number ___
Description _____

Point(s) of Contact (POC) for questions on the delivery (include phone numbers, e-mail addresses, and PGEs for which POC is responsible):

B. DESCRIPTION OF DELIVERY

Delivery:

a. Release Level

Beta ___ Engineering Version ___ Mission Version ___

b. Scope

Initial Subsystem Delivery (Incremental) ___ Delta ___

c. Delta Delivery Class (if applicable). Please refer to the SPD for definitions.

Functional ___ Nominal ___ Emergency ___

C. DELIVERY LOGISTICS

1. Date files will be delivered to CERES CM _____
2. Method of delivery from SCF to DAAC is via FTP “put” by SCF.
3. Format

a. Tar Files
Compressed (Y/N) ___
Compression utility _____
Number of tar files ___
Provide names and approximate sizes of tar files (bytes).

b. ASCII

Compressed (Y/N)___
Compression utility_____
Number of files ___
Provide names and sizes of files (bytes).

c. PDF
Number of files ___
Provide names and sizes of files (bytes).

d. Other (repeat section as needed)
Format description _____
Number of files ___
Provide names and sizes of files (bytes).

D. LIST OF DELIVERY CONTENTS

1. Number of PGEs in Delivery ____

   Estimate of maximum resources required for each PGE execution in production (i.e., disk storage, cpu time (elapsed, user, and system), and memory which can be obtained via the unix time command). This information is necessary to enable the DAAC to plan for resource usage.

Table 1. PGE Description

PGE Number	PGE Name	PGE Status (E/N[a])	Disk Storage (MB)	Memory (MB)	CPU Time		
					Elapsed (sec)	User (sec)	System (sec)

a. PGE Status: E = Existing, N = New

2. Provide requested information for reference documentation.

   a. Test Plan Date _____
   Version _____
   Included in Delivery (Y/N) ___

b. Operators Manual Date _____
Version _____
Included in Delivery (Y/N) ___

3. CERESlib Information

a. CERESlib Version used by subsystem to create the expected output for this delivery _____

b. CERESlib Version used to compile software in SSI&T environment _____
(Resulting executable(s) to be used in production processing)

E. REPROCESSING REQUIRED DUE TO SOFTWARE MODIFICATION

For specific reprocessing requirements, please refer to the CERES DMT to DAAC Processing Requests instructions available on the Web at: http://asd-www.larc.nasa.gov/ceres/dmt2daac/.

1. Provide number and names of products to be reprocessed.

2. Provide the requested information for EACH data product.

a. Beginning Date _____
b. Ending Date _____

F. NEW PGE

Number of new PGEs _____

Complete Sections F.1 - F.9 for each new PGE (copy and paste as necessary).

First PGE:

1. Name of new PGE _____
2. Provide description of the new PGE.

3. PGE(s) which provide input _____
4. PGE(s) which use output _____
5. Runtime parameters (list all dynamic parameters needed at runtime).

Table 2. Runtime Parameters for PGE

Parameter	Description	Data Type	Valid Values

6. List the environment variables used by this PGE.

7. Execution frequency (daily, hourly, ...) and explanation.

8. Input dataset name _____
   a. Provide the directory location and expected file names.
      1. Mandatory/Optional.
      2. Time related dependency.
      3. Waiting period.
   b. Provide the source of information (source PGE name or ingest source).
   c. Alternate dataset, if one exists (maximum waiting period).
   d. Typical file size (MB) _____
9. Provide the expected output dataset(s).

Table 3. Expected Output File Listing for PGE

File Name/Directory	File Size (MB)	Freq/ PGE	Destination

G. ADDITIONAL INFORMATION AND/OR INSTRUCTIONS TO BE INCLUDED WITH THIS DELIVERY (include information on reason for delivery as provided in the SCCR)

CERES Subsystem Delivery Procedures

1. Review CERES Subsystem Delivery Schedule (http://earth-www.larc.nasa.gov/cerescm/schedules/) when the announcement that the schedule has been updated is received. The current schedule is at the top of the list on the Web page.

2. A Software Configuration Change Request (SCCR) should be submitted when you expect or are planning to make changes to your subsystem's software configuration. At the very latest an SCCR must be submitted prior to submitting a preliminary Delivery Memo to CERES CM (CERESlib may be an exception).

3. Prepare and send a preliminary Delivery Memo to CERES CM (cerescm@larc.nasa.gov) as scheduled (see File Naming Conventions table). All sections of the Delivery Memo should be completed except D.3.b. Estimate the file sizes for Section C. If you have any questions about how to fill out the Delivery Memo please contact CERES CM. If your Delivery Memo is not in the current format, download the CERES Delivery Memo Template from the CERES CM home page (http://earth-www.larc.nasa.gov/cerescm/). A sample Delivery Memo is also available on the CERES CM home page.

4. Test Plans and Operator's Manuals only need to be delivered if they have been updated since the last time they were delivered. If changes need to be made to these documents, download the FrameMaker tar file for the document from the Web. Go to the CERES On-Line Documentation page (http://asd-www/ceres/docs.html) and select the type of document that needs to be updated. Then select the appropriate document from the specific document Web page.

5. Ensure that the correct output file names are included in and are consistent between the Test Plan and Operator's Manual and that these names accurately reflect the names of the output files that are created by the software.

6. Test Plan Instructions
   - Instructions for how and when to execute the clean-up script(s) should be in the Test Plan.
   - When the code is tested prior to delivery, be sure to use the Test Plan that you intend to send to CERES CM. Once you've completed testing do not change the Test Plan.
   - Be sure that the execution time stated in the Test Plan for each test is accurate as tested on *samantha*.
   - Be sure to include the output file names for the test case(s) either in the Test Plan or in a file included in the delivery package. If the file names are listed in a file, make sure the file is referred to by name in the Test Plan in the appropriate place (i.e., after the output files are created).

7. Send the Test Plan and Operator's Manual as e-mail attachments to ceresdoc@larc.nasa.gov. For each document, create a compressed tar file, using the UNIX "compress" command, containing the document in full FrameMaker book form (see File Naming Conventions table). Don't clear the change bars before delivering documents. (Note: If formatting assistance is

needed for either the Test Plan or Operator's Manual, please send the document with instructions to ceresdoc@larc.nasa.gov.)

8. Send Operator's Manual as soon as possible (at least a week or two before delivering to CERES CM). This will shorten operational testing time since the ASDC uses information from the Operator's Manual to write and update scripts used during testing. If information in the Operator's Manual is inaccurate, the testing time will increase.

9. Clean-up script(s) for test cases which remove the files created by executing the Test Plan commands should be included in the delivery package.

10. Clean-up script(s) which remove files created during production runs should be included in the delivery package and information on the use of these scripts should be in the Operator's Manual.

11. Print exit codes to the screen.

12. Don't deliver object code or executables.

13. Don't deliver the smf.log file.

14. Test and create expected output on *samantha*. Get an account on *samantha* if you don't already have one. Go to the correct CERESlib directory (NAG or SGI) for your software and source the CERES environment variable (ceres-env) file in that directory before compiling and testing the code.

15. Don't deliver input data for your test cases in other subsystem directories. Include the files somewhere in your subsystem directory structure (e.g. the input directory) and include instructions in the Test Plan for copying (not moving) these files to the appropriate directory (i.e., the directory where the subsystem generating the input data as output data puts the files). Note: Try to provide CERES CM at least 24 hours advance notice if you plan to use input data from archives to create your expected output to ensure the data are staged in the production area before you begin testing. The use of this data also needs to be described in the Test Plan.

16. Tar File Instructions
    - In general, there will be 3 tar files provided with each delivery: source, ancillary data, and all other data (see File Naming Conventions table).
    - Tar files should be created by the subsystem from the **working group level** (/ENG/CERES/sarb/testing/**sarb/...**) and should include all of the directories from the directory structure established by the Langley DAAC whether or not they contain any files (see Appendix G of the SSI&T Procedures Document found on the Web at http://latis:44712/latis/ under "Documentation").
    - Remove extraneous files/directories before creating tar files.
    - Tar files should not exceed 1 GB.

- Before compressing tar files do “tar -tvf” to get a listing of the contents of the tar file. Don’t use tar_file_list.csh anymore.
  Example: tar -tvf instrument_src_R3-237.tar > instrument_src_R3-237.list
- Use the UNIX “compress” command to compress the tar files.

17. Make the subsystem delivery on or before the scheduled “Delivery to CERES CM” date according to the latest CERES Subsystem Delivery Schedule (http://earth-www.larc.nasa.gov/cerescm/schedules/). If you can’t do this, send e-mail to cerescm@larc.nasa.gov as soon as possible.

18. Deliver tar files and tar file listings to CERES CM by using the cm_move.csh script found in /CERES/CERES_CM/cm_bin on *lightning*. To do this, from your directory on *thunder* or *lightning* where your tar files reside, type:
    /CERES/CERES_CM/cm_bin/cm_move.csh <tar_file_name.tar.Z> <tar_file_name.list>

19. Send final Delivery Memo to cerescm@larc.nasa.gov (see File Naming Conventions table). All sections should be completed except D.3.b and PDF file sizes.

File Naming Conventions

File	File Name
Preliminary Delivery Memo (FrameMaker)	**SS**_pre_del_memo_**R#**-SCCR
Final Delivery Memo (FrameMaker)	**SS**_del_memo_**R#**-SCCR
Test Plan (FrameMaker)	**SS**_test_plan.book **SS**_test_plan.cover **SS**_test_plan.revision **SS**_test_plan.preface **SS**_test_planTOC.doc **SS**_test_planLOF.doc **SS**_test_planLOT.doc **SS**_test_plan.doc **SS**_test_plan.app**?**
Operator's Manual (FrameMaker)	**SS**_opman.book **SS**_opman.cover **SS**_opman.revision **SS**_opman.preface **SS**_opmanTOC.doc **SS**_opmanLOF.doc **SS**_opmanLOT.doc **SS**_opman.doc **SS**_opman.app**?**
Test Plan Compressed Tar File	**SS**_test_plan_**R#V##**-SCCR.tar.Z
Test Plan (PDF)	**SS**_test_plan_**R#V##**-SCCR.pdf
Operator's Manual Compressed Tar File	**SS**_opman_**R#V##**-SCCR.tar.Z
Operator's Manual (PDF)	**SS**_opman_**R#V##**-SCCR.pdf
Compressed Ancillary Data Tar File	**SS**_anc_**R#**-SCCR.tar.Z
Ancillary Data List File	**SS**_anc_**R#**-SCCR.list
Compressed Source Code Tar File	**SS**_src_**R#**-SCCR.tar.Z
Source Code List File	**SS**_src_**R#**-SCCR.list
Compressed Other Data Tar File	**SS**_data_**R#**-SCCR.tar.Z
Other Data List File	**SS**_data_**R#**-SCCR.list

Key

SS - instrument, erbelike, clouds, inversion, InstSARB, TISAgrid, TISAavg, ggeo, RegridMOA, CERESlib

R# - Release number (example, Release 3 is represented by R3)

V## - Version number (example, Version 2 is represented by V2)

? - Letter of the particular appendix (example, Appendix A is represented by appA)

CM Delivery Preparation Helpful Hints

Hints on CERES Documentation

1. When filling out SCCRs, please indicate which changes go with which PGEs.
2. The last Final Delivery Memo submitted by each subsystem is available on the CM page and can be used as a template. (**http://earth-www.larc.nasa.gov/cerescm/**)
3. Always obtain a formatted copy of the Test Plan and Operator's Manual from the CERES Documentation page, before making updates. (**http://asd-www.larc.nasa.gov/ceres/docs.html**)
4. New PGE information is not required on the Pre-Delivery Memo, IF the Operator's Manual is delivered with the Pre-Delivery Memo. (Just add comment: "See Operator's Manual".)

Hints for Algorithm Developers

1. Directory structures on different machines can mimic the production environment with $CERESHOME being the only environment variable that needs to be change. Under the new $CERESHOME, the developer can create directories for required input. (Example: $CERESHOME/sarb/data/out_comp/data/regridmoa can be created and MOA input files can be linked there for testing. Example of a command to link a MOA file: ln -s /CERES/sarb/data/out_comp/data/regridmoa/CER_MOA_CERES_ECMWF-GEOS3_016020.2002093018 $CERESHOME/sarb/data/out_comp/data/regridmoa/)
2. CM delivery tar files do not have to be ftp-ed from *samantha* to *lightning* or *thunder*. cm_move can be run at the SCF from a /DAAC_ENG sub-directory.
3. SS1 has a script available to remove CVS directories from your directories in the DAAC test area (/ENG/CERES/instrument/delivery_scripts/remove_CVS_dir.csh).
4. Do not hard code computer names in scripts delivered for CERES production.
5. Make sure that your PGE testing at the SCF includes checking end of year boundaries and Feb. 29th dates
6. Creating scripts that will move output data to the expected output directories and clean up all other files can save time and insure that only the required data is placed in the tar files.

Hints from CERES CM

1. Pre-delivery memos can be updated to create a final delivery memo.
2. Updates to CERES documentation that is initiated by cutting and pasting sections from another part of the document, needs to be checked carefully and reviewed by another Subsystem team member.
3. To use local_version.csh to quickly obtain the current local CERESlib version, cd to the $CERESLIB/bin directory and run the local_version.csh script.
4. Subsystems should consider having separate compilation scripts for each PGE, instead of editing one script that covers an entire subsystem. (CERES CM prefers separate PGE compilation scripts because they usually have fewer errors.)
5. Reminder: The SSI&T area (directories in /SSIT/CERES) on *samantha* contains the executable for the last delivered/compiled code for each CERES PGE.
6. There are different ways of handling PGEs that were delivered to only handle TRMM and now will also handle other instruments. It may be helpful to talk to other subsystems that have already tackled this problem.

CM Delivery Preparation Helpful Hints

Hints from ASDC

1. Make sure that all output files are listed in the Operator's Manual and PCF file. The Epilogue at the ASDC will not be programmed correctly if there is an error in either of these areas.
2. Make sure that all output files listed in the Operator's Manual are correctly marked for archive, QC disks and/or removal. If you are not sure how an output file should be marked, please contact someone on the SE committee.
3. Please be careful when cutting and pasting information in documents and be sure that all of your updates are completed.

Acronyms

APGS	Automatic Product Generation System
ASDC	Atmospheric Sciences Data Center
CC, CCode	Configuration Code
CERES	Clouds and the Earth's Radiant Energy System
CM	Configuration Management
DAAC	Distributed Active Archive Center
DM	Data Management
FTP	File Transfer Protocol
HDF	Hierarchical Data Format
LaTIS	Langley TRMM Information System
PCF	Process Control File
PDF	Portable Document Format
PGE	Product Generation Executives
PR	Production Request
SAIC	Science Applications International Corporation
SCCR	Software Configuration Change Request
SCF	Science Computing Facility
SS	Subsystem
SSI&T	Science Software Integration and Test
TRMM	Tropical Rainfall Measuring Mission